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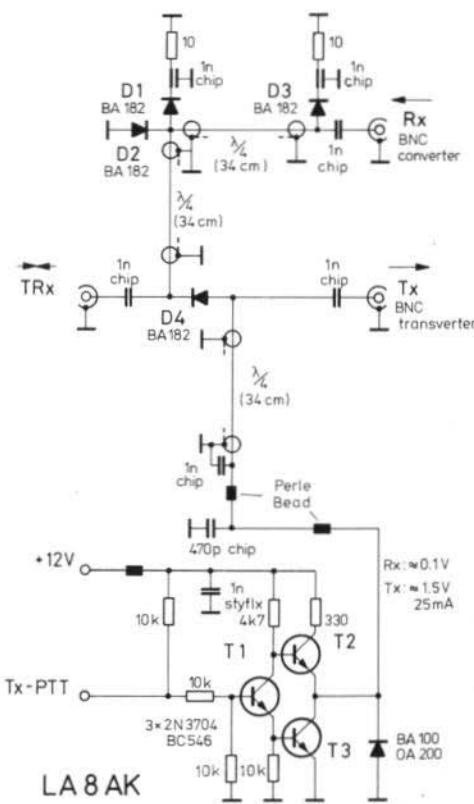
Improved Pin-Diode Switch for Transmit/Receive Switching

A simple circuit is to be described to switch the signal at the antenna connector of a 144 MHz transceiver such as the IC202 to a transmit or receive converter for the UHF or Microwave bands. This circuit has similar switching functions as the PIN-diode switching circuit described in Edition 1/1982 of VHF COMMUNICATIONS.

As can be seen in the **circuit diagram**, a total of four PIN-diodes type BA 182 (or BA 243, BA 282), are used which all conduct in the transmit mode. The good characteristics given in the table are obtained by replacing the previously used RF-chokes by $\lambda/4$ coaxial lines, and the general use of chip capacitors. A simple control circuit is used to generate the required voltage and current values required for switching.

Operation

When the input "TX-PTT" is not grounded, a voltage of 50–100 mV will be available at the output of the three-stage transistor circuit, which is more than sufficient to switch the PIN-diodes. In this mode, the signal at connector "RX" is fed to the transceive connector "TRX". The path to the "TX" connector is blocked. If, on the other hand, TX-PTT is grounded, the transistor circuit will supply approximately 25 mA, which means that D4 to D1 will conduct. The receive path will now attenuate signals in both directions, and the transceiver is connected through to the "TX" connector.





From connector	To connector	Attenuation	Measuring level	Drive mode
RX	TX	15 dB	- 10 dBm	PTT high
	TRX	≤ 0.4 dB	- 20 dBm	PTT high
	TX	15 dB	- 10 dBm	PTT high
TRX	TX	≤ 0.4 dB	- 20 dBm	PTT low
	RX	55 dB	+ 10 dBm	PTT low
	RX	55 dB	+ 10 dBm	PTT low

Measured Values

The following equipment was used during the measurements:

Signal Generator WAVETEK 3001, Fieldstrength Meter PRESTEL MC 26, Power Meter BIRD 43, as well as several attenuators. All unused connec-

tors were terminated with 50Ω . A power level of 5 W was available for attenuation measurements in the transmit path.

All measured values in the **Table** were measured at 144 MHz.

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